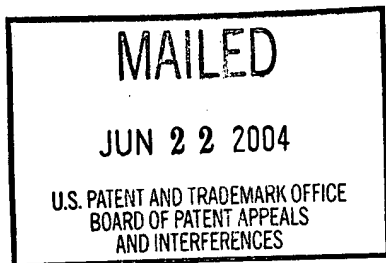


The opinion in support of the decision being entered today was not written
for publication and is not binding precedent of the Board.

Paper No. 45

UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**



Ex parte MICHAEL J. SULLIVAN

Appeal No. 2004-1262
Application No. 08/815,556

ON BRIEF

Before GARRIS, NASE, and CRAWFORD, Administrative Patent Judges.
NASE, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1 to 13,
which are all of the claims pending in this application.

We AFFIRM.

BACKGROUND

The appellant's invention relates to improved golf balls comprising multi-layer covers which have a hard inner layer and a relatively soft outer layer (specification, p. 1). A copy of the claims under appeal is set forth in the appendix to the appellant's brief.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Nesbitt	4,431,193	Feb. 14, 1984
Sullivan	4,884,814	Dec. 5, 1989
Horiuchi et al. (Horiuchi)	5,222,739	June 29, 1993

Claims 1 to 5, 9 to 11 and 13 stand rejected under 35 U.S.C. § 103 as being unpatentable over Nesbitt in view of Horiuchi.

Claims 6 to 8 and 12 stand rejected under 35 U.S.C. § 103 as being unpatentable over Nesbitt in view of Horiuchi and Sullivan.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellant regarding the above-noted rejections, we make reference to the final rejection (Paper No. 35, mailed February 28, 2003) and answer (Paper No. 41, mailed October 3, 2003) for the examiner's complete reasoning in support of the rejections, and to the brief

(Paper No. 40, filed July 28, 2003) and reply brief (Paper No. 42, filed November 6, 2003) for the appellant's arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellant's specification and claims, to the applied prior art, and to the respective positions articulated by the appellant and the examiner. As a consequence of our review, we will sustain the rejection of claims 1 to 13 under 35 U.S.C. § 103 for the reasons which follow.

Claims 1 to 5, 9 to 11 and 13

We sustain the rejection of claims 1 to 5, 9 to 11 and 13 under 35 U.S.C. § 103 as being unpatentable over Nesbitt in view of Horiuchi.

Claim 1 reads as follows:

A golf ball comprising:
a core;
an inner cover layer molded on said core, the inner cover layer comprising a high acid ionomer including greater than 16% by weight of an alpha, beta-unsaturated carboxylic acid; and
an outer cover layer molded on said inner cover layer, said outer cover layer comprising a relatively soft polymeric material selected from the group consisting of low flexural modulus ionomer resins and non-ionic elastomers.

Nesbitt's invention relates to a golf ball having a multilayer or two-ply cover construction for a solid resilient center or core wherein the multilayer cover construction involves two stage molded cover compositions over a solid center or core of resilient polymeric material wherein an increased coefficient of restitution is attained and wherein the "feel" or playing characteristics are attained similar to those derived from a balata covered golf ball. The golf ball has a solid center or core 12 of resilient polymeric or similar material covered by a first layer or ply 14 of molded hard, highly flexural modulus resinous material or of cellular or foam composition which has a high coefficient of restitution. The first layer or ply is provided with a second or cover layer 16 of a comparatively soft, low flexural modulus resinous material or of cellular or foam composition molded over the first layer and core or center assembly. Nesbitt teaches (column 1, lines 57-60) that "[t]hrough the use of the first ply or layer of hard, high flexural modulus resinous material on the core or center, a maximum coefficient of restitution may be attained." The resinous material for the first ply or layer 14 is a resinous material such as type 1605 Surlyn® which is a hard, high flexural modulus resin which produces a substantial gain of coefficient of restitution over the coefficient of restitution of the core or center. The outer layer, ply, lamination or cover 16 is a resinous material such as type 1855 Surlyn® which is a comparatively soft, low flexural modulus resinous material.¹

¹ The appellant's disclosure teaches (pages 4-5) that (1) Surlyn® 1605 (now designated Surlyn® 8940) is a sodium ion based low acid (less than or equal to 15 weight percent methacrylic acid) ionomer resin having a flexural modulus of about 51,000 psi; and (2) Surlyn® 1855 (now designated Surlyn® 9020) is a zinc ion based low acid (10 weight percent methacrylic acid) ionomer resin having a flexural modulus of about 14,000 psi.

Horiuchi's invention relates to a golf ball having excellent impact resilience and flying performance, of which the cover is formed from an ionomer resin which contains an alpha, beta-ethylenic unsaturated carboxylic acid in a larger amount than conventional ionomer resins. In the background of the invention, Horiuchi provides that it is known to compose a golf ball of a core and a cover covering the core wherein the ionomer resin which is used as the cover of the golf ball contains alpha, beta-ethylenic unsaturated carboxylic acid in an amount of less than 15% by weight. In the summary of the invention, Horiuchi states that

It has been surprisingly found that a carboxyl-rich ionomer resin which contains 16 to 30% by weight of an alpha, beta-ethylenic unsaturated carboxylic acid significantly improves the properties of the golf balls, such as impact resilience and flying performance. Thus, the present invention provides a golf ball which comprises a core and a cover covering the core, wherein the cover contains at least 20% by weight of a carboxyl-rich ionomer resin prepared by neutralizing 15 to 80 mol % of carboxylic acid groups of an olefinic copolymer containing 16 to 30% by weight of an alpha, beta-ethylenic unsaturated carboxylic acid with monovalent or divalent metal ions.

Horiuchi then provides (column 1, lines 50-59) that

an amount of the alpha, beta-ethylenic unsaturated carboxylic acid is limited to 16 to 30% by weight, preferably 20 to 30% by weight, based on the total monomer weight. Thus, the balance of the monomer is the alpha-olefin. If the amount of the alpha, beta-ethylenic unsaturated carboxylic acid is less than 16% by weight, a stiffness modulus is low and an impact resilience is low, thus resulting in poor flying performance.

Horiuchi also teaches (column 2, lines 16-18) that it is preferred that the carboxyl-rich ionomer resin of the present invention has a stiffness modulus of 3,000 to 6,000 Kgf/cm² which converts to about 42,670 to 85,340 psi.

After the scope and content of the prior art are determined, the differences between the prior art and the claims at issue are to be ascertained. Graham v. John Deere Co., 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966).

Based on our analysis and review of Nesbitt and claim 1, it is our opinion that the sole difference is the inner cover layer comprising a high acid ionomer including at least 16% by weight of an alpha, beta-unsaturated carboxylic acid.

In applying the test for obviousness,² we reach the conclusion that it would have been obvious at the time the invention was made to a person of ordinary skill in the art to have modified the resinous material used for the inner cover of Nesbitt's golf ball to be an ionomer resin containing about 20% alpha, beta-ethylenic unsaturated carboxylic acid as suggested by the teachings of Horiuchi to improve the impact resilience of the inner cover and thus increase the coefficient of restitution of the inner cover and the golf ball.

The appellant argues that there is no motivation, absent the use of impermissible hindsight, for a person of ordinary skill in the art to have modified the inner cover 14 of Nesbitt's golf ball from the teachings of Horiuchi and that the teachings of Horiuchi would have made it obvious to have modified the outer cover 16 of Nesbitt's golf ball. We do not

² The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. See In re Young, 927 F.2d 588, 591, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991) and In re Keller, 642 F.2d 413, 425, 208 USPQ 871, 881 (CCPA 1981).

agree. Nesbitt clearly teaches (column 2, lines 40-65) that the inner cover 14 of Nesbitt's golf ball is a hard, high flexural modulus resin which "is employed to increase the coefficient of restitution in order to attain or approach the maximum initial velocity for the golf ball" and that the outer cover 16 of Nesbitt's golf ball is a soft low flexural modulus resin which "provides little or no gain in the coefficient of restitution." In our view, Horiuchi's teaching to use a carboxyl-rich ionomer resin which contains preferably 20 to 30% by weight of an alpha, beta-ethylenic unsaturated carboxylic acid to significantly improve the properties of a golf ball, such as impact resilience and flying performance, would have made it obvious at the time the invention was made to a person of ordinary skill in the art to have modified the cover layer of Nesbitt's golf ball that Nesbitt teaches should have the maximum coefficient of restitution (i.e., inner cover 14).

As to the appellant's argument pointing out the deficiencies of both Nesbitt and Horiuchi on an individual basis, we note that it is well settled that nonobviousness cannot be established by attacking the references individually when the rejection is predicated upon a combination of prior art disclosures. See In re Merck & Co. Inc., 800 F.2d 1091, 1097, 231 USPQ 375, 380 (Fed. Cir. 1986). In this case, the combined teachings of the applied prior art are suggestive of the claimed subject for the reasons set forth above.

In the brief (p. 8), the appellant has referenced the Board decision in an earlier appeal in this application. In response, the examiner (answer, pp. 2 and 3) has referenced

a Board decision in another related appeal (i.e., Application No. 09/121,628). We have reviewed both Board decisions and note that our decision herein is in harmony with our decision in Application No. 09/121,628.³ As to the previous Board decision in this application, we note that the issue in that appeal was whether or not the claims under appeal would have been obvious at the time the invention was made to a person of ordinary skill in the art from the teachings of Nesbitt and U.S. Patent No. 5,068,151 to Nakamura. Thus, the issues in this appeal are different than the issue decided in the previous appeal.

For the reasons set forth above, the decision of the examiner to reject claim 1 under 35 U.S.C. § 103 as being unpatentable over Nesbitt in view of Horiuchi is affirmed.

The decision of the examiner to reject claims 2 to 5, 9 to 11 and 13 under 35 U.S.C. § 103 is also affirmed since the appellant has not argued separately the patentability of any particular claim apart from the others, thus allowing claims 2 to 5, 9 to 11 and 13 to fall with claim 1 (see In re Young, 927 F.2d 588, 590, 18 USPQ2d 1089, 1091 (Fed. Cir. 1991); In re Nielson, 816 F.2d 1567, 1572, 2 USPQ2d 1525, 1528 (Fed. Cir. 1987); In re Wood, 582 F.2d 638, 642, 199 USPQ 137, 140 (CCPA 1978); and 37 CFR § 1.192(c)(7) and (8)(iv)).

³ Our decision herein is also in harmony with our decision rendered in Application No. 10/047,626.

Claims 6 to 8 and 12

We sustain the rejection of claims 6 to 8 and 12 under 35 U.S.C. § 103 as being unpatentable over Nesbitt in view of Horiuchi and Sullivan.

Claim 12 reads as follows:

A multi-layer golf ball comprising:
a spherical solid core;
an inner cover layer molded over said spherical solid core, said inner cover layer comprising an ionomeric resin including at least 16% by weight of an alpha, beta-unsaturated carboxylic acid and having a modulus of from about 15,000 to about 70,000 psi;
an outer cover layer molded over said inner cover layer to form a multi-layer golf ball, the outer cover layer comprising a blend of i) a sodium or zinc salt of a copolymer having from 2 to 8 carbon atoms and an unsaturated monocarboxylic acid having from 3 to 8 carbon atoms, and ii) a sodium or zinc salt of a terpolymer of an olefin having 2 to 8 carbon atoms, methacrylic or acrylic acid and an unsaturated monomer of the acrylate ester class having from 1 to 21 carbon atoms, said outer cover layer having a modulus in a range of about 1,000 to about 30,000 psi.

Sullivan's invention relates to golf ball technology, and more particularly, golf ball cover technology. Sullivan teaches that ionomers have been widely used as golf ball cover materials for the past 15 years and that while these ionomers are very durable, they have a deficiency as a golf ball cover material in that they tend to be hard. This invention is concerned with a mixture of a hard ionomer with a soft ionomer in

order to produce a golf ball cover composition wherein the cover is softer than the prior art ionomer covers. Sullivan states that a golf ball covered in accordance with his invention is durable and a skilled golfer can impart back spin to the ball in play.

Sullivan teaches that (1) for over a decade the trade attempted to solve the problem associated with Surlyn® covered golf balls by the blending of hard Surlyn® with a soft Surlyn®; (2) until his invention, the blending of a hard Surlyn® and a soft Surlyn® was totally unsatisfactory in the production of a commercially viable golf ball; and (3) in accordance with his invention, it has been found that when a hard Surlyn® or a mixture of hard Surlyn® resins are blended with a soft Surlyn® which is a terpolymer of methacrylic acid and iso- or n-butylacrylate partially neutralized with a metal salt, a superior golf ball cover formulation is produced. Sullivan provides that the resulting cover composition of his invention is intermediate in softness between a balata covered golf ball and a hard Surlyn® covered golf ball, to such a degree that an adequate back spin can be imparted to the ball by a skilled golfer. Further, the resulting golf ball exhibits a degree of cut resistance which is adequate for play and which exhibits outstanding distance properties which is exhibited by its coefficient of restitution and/or initial velocity.

The high modulus ionomer taught by Sullivan has a flexural modulus of from about 30,000 to 55,000 psi and a hardness of from about 60 to 66 on the Shore D scale. The hard Surlyn® resins used in this invention are ionic copolymers which are the sodium or

zinc salts of the reaction product of an olefin having from 2 to 8 carbon atoms and an unsaturated monocarboxylic acid having from 3 to 8 carbon atoms. The low modulus ionomer taught by Sullivan has a modulus of from about 3,000 to about 7,000 psi and a hardness of from about 25 to about 40 as measured on the Shore D scale. The low modulus ionomer may be a sodium or zinc salt of a terpolymer of an olefin having from 2 to 8 carbon atoms, an unsaturated monocarboxylic acid having from 3 to 8 carbon atoms and an unsaturated monomer of the acrylate ester class having from 2 to 22 carbon atoms.

Based on our analysis and review of Nesbitt and claim 12, it is our opinion that the differences are: (1) the inner cover layer comprising an ionomeric resin including at least 16% by weight of an alpha, beta-unsaturated carboxylic acid and having a modulus of from about 15,000 to about 70,000 psi; and (2) the outer cover layer comprising a blend of i) a sodium or zinc salt of a copolymer having from 2 to 8 carbon atoms and an unsaturated monocarboxylic acid having from 3 to 8 carbon atoms, and ii) a sodium or zinc salt of a terpolymer of an olefin having 2 to 8 carbon atoms, methacrylic or acrylic acid and an unsaturated monomer of the acrylate ester class having from 1 to 21 carbon atoms, said outer cover layer having a modulus in a range of about 1,000 to about 30,000 psi.

In applying the above-noted test for obviousness, we reach the conclusion that it would have been obvious at the time the invention was made to a person of ordinary skill in the art to have modified (1) the resinous material used for the inner cover of Nesbitt's golf ball to be an ionomer resin containing about 20% alpha, beta-ethylenic unsaturated carboxylic acid as suggested by the teachings of Horiuchi to improve the impact resilience of the inner cover and thus increase the coefficient of restitution of the inner cover and the golf ball for the reasons set forth above with respect to claim 1⁴; and (2) the resinous material used for the outer cover of Nesbitt's golf ball to be a blend of a hard high modulus ionomer with a soft low modulus ionomer, the high modulus ionomer being a sodium, zinc, magnesium or lithium salt of a copolymer having from 2 to 8 carbon atoms and an unsaturated monocarboxylic acid having from 3 to 8 carbon atoms, the low modulus ionomer being a sodium or zinc salt of a terpolymer of an olefin having 2 to 8 carbon atoms, acrylic acid and an unsaturated monomer of the acrylate ester class having from 2 to 22 carbon atoms as suggested by the teachings of Sullivan to improve the impact resilience of the outer cover and thus increase the coefficient of restitution of the golf ball while maintaining the ability of a skilled golfer to impart adequate back spin to the golf ball.

The appellant argues that Sullivan does not remedy the previously discussed deficiencies of Nesbitt and Horiuchi and that there is no motivation, suggestion or teaching

⁴ With regard to the limitation of claim 12 that the inner cover layer have a modulus of from about 15,000 to about 70,000 psi we note that this limitation is met by Nesbitt's inner cover 14 and by Horiuchi's cover material when such material is substituted for the inner cover layer of Nesbitt's golf ball.


to combine Sullivan with Nesbitt to provide the claimed outer cover layer. These arguments are unpersuasive for the following two reasons. First, as explained above we see no deficiency in the teachings of Nesbitt and Horiuchi with respect to claim 1 on appeal. Second, we believe there is motivation and suggestion for a person of ordinary skill in the art, at the time the invention was made, to have modified Nesbitt's outer cover layer based on the teachings of Sullivan to arrive at the claimed outer cover layer as set forth in the previous paragraph.

For the reasons set forth above, the decision of the examiner to reject claim 12 under 35 U.S.C. § 103 as being unpatentable over Nesbitt in view of Horiuchi and Sullivan is affirmed. The decision of the examiner to reject claims 6 to 8 under 35 U.S.C. § 103 is also affirmed since the appellant has not challenged the rejection of these claims with any reasonable specificity, thereby allowing claims 6 to 8 to fall with claim 12 (see In re Young, supra; In re Nielson, supra; In re Wood, supra; 37 CFR § 1.192(c)(7) and (8)(iv)).

CONCLUSION

To summarize, the decision of the examiner to reject claims 1 to 13 under 35 U.S.C. § 103 is affirmed.

AFFIRMED


MURRIEL E. CRAWFORD
Administrative Patent Judge

) BOARD OF PATENT
) APPEALS
) AND
) INTERFERENCES

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